DOCUMENT RESUME

ED 107 213 IR 001 949

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TITLE An Investigation Into the Effects of Background Music in a Dramatic Television Presentation on University Students' Perception and Retention of Cognitive Content.
PUB DATE [75]
NOTE 28p.

EDRS PRICE MF-$0.76 HC-$1.95 PLUS POSTAGE
DESCRIPTORS Applied Music; *Cognitive Processes; College Students; *Drama; *Educational Experiments; Educational Research; Higher Education; Intermode Differences; Jazz; Learning Modalities; Music; Music Appreciation; Oriental Music; Perception; *Retention Studies; Teaching Techniques
IDENTIFIERS Background Music

ABSTRACT

To investigate the effects of background music on perception and retention of a dramatic television presentation's cognitive content, 107 English literature students were randomly assigned to one of five background treatments for a play. Four of the videotaped presentations included background music; Shostakovich's Symphony No. 6; Japanese jazz; American banjo-guitar folk music; and Bach's Unaccompanied Suite for Viola. The fifth treatment had no music. Students were given a 25-item multiple-choice test covering factual and interpretive information about the play. A comparison of scores showed no significant difference for the four treatments and the no-treatment modality. The finding contrasts with earlier findings, described in an extensive literature search. (SK)

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AN INVESTIGATION INTO THE EFFECTS OF BACKGROUND MUSIC IN A DRAMATIC TELEVISION PRESENTATION ON UNIVERSITY STUDENTS' PERCEPTION AND RETENTION OF COGNITIVE CONTENT

by

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IR 001 949

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INTRODUCTION

Music and the presentation of drama have been associated in some form for many years. In the classical Greek tragedy and comedy, incidental music on single instruments of wood-wind or string was confined to short interludes which marked the passage of time or provided transition between chorus and dialogue (Watling, 1967).

When the theatre of the Renaissance began the development of modern drama, which was to remain virtually unbroken to the present time, the place of music in dramatic production varied considerably with the form taken by the drama itself (Huntley and Manvill, 1957). In most cases, the language lines were important; the music became incidental.

An effective example of incidental music in a play was noted by Samuel Pepys in February, 1668, when

he attended a performance of Dekker and Massinger's The Virgin Martyr at the King's Theatre in London, England. He stated:

> . . . But that which did please me beyond anything in the whole world was the wind-musique when the angel comes down, which is so sweet that it ravished me, and, indeed in a word, did wrap up my soul. . .(Huntley and Manvill, 1957).

In the Elizabethan era, the masque was a histrionic dramatic form closely related to both the play and the opera. It unfolded its story in song and spoken word with frequent dances by characters and chorus (Boyd, 1962). With this form of dramatic production, operas were later developed in Italy during the eighteenth century.

By the late nineteenth century, there was a historic tradition for music in the living theatre. With this tradition, the development of motion pictures in the 1890's propelled this practice into a new medium.

Zuckerman (1949) had the following to say about film music:

> It is commonplace that a motion picture, whether it has been produced for entertainment,

> information, or instruction, contains some kind of music. Music is included in films partly because of the traditions of accompanying silent pictures with musical background, played by piano, organ or orchestra; the practice has persisted.

With the advent of the sound-on-film projector in 1932, most film producers recognized the importance of music as a film element. However, very little documented research has been done in this area.

SOME PROPERTIES OF BACKGROUND MUSIC AND RELATED RESEARCH

London (1936) advanced the proposition that music for film must serve to further the "psychological advancement of the action." It has to establish association of ideas and carry on the development of thought.

Rotha (1952), in his book Documentary Film, stated:

> Modern music for sound film must be an integral part of the sound script, must on occasions be allowed to dominate the picture, must on others perform merely an atmospheric function and frequently it must be intermixed with natural sound and speech.

Film composer Sir Arthur Bliss advanced the theory

in The Technique of Film Music that film music is powerfully expressive. It can bring nostalgia to landscape, drama to any hour of day or night; music can suggest what is going to happen; it can recall what has happened. Most important of all, perhaps, music can make what has turned dead and dull in a picture come alive and exciting (Huntley and Manvill, 1957).

Saettler (1969) stated that research conducted by the Division of Academic Research and Services at Pennsylvania State University involved over eighty individual studies concerning motion pictures. This research incorporated defined variables and compared the effects of motion pictures on appropriate groups of learners under laboratory controls. A summary of these studies included music as one variable for consideration by instructional film producers. The summary stated that preliminary experimentation suggested that music does not add to the instructional effectiveness of an informational film.

With the tradition of film music established, the new medium of television has imited film music production techniques. In Educational Films, Herman (1965) stated:

The fact is not commonly appreciated that films for educational television need no special production techniques and procedures other than those required for making the usual educational film.

Zuckerman (1949) completed a rather comprehensive review of pertinent literature on film music prior to 1949. The purpose of his study was to assist specialists at Pennsylvania State College in improving or increasing the force and power of instructional motion pictures.

Zuckerman included in his report the possible informational, emotional, conceptional, and integrative functions of film music. A list of techniques for achieving those functions and critiques of those techniques as used in motion pictures was also presented.

The report also outlined film music's possible applications to learning from film. They were as follows:

1. Perceptional direction. Music could provide an initial set for attention by overcoming perseverance or previous distractions.
2. Motivational aids. Music might provide

a kind of "reward" in that a learner, recognizing an association intented by the music, would sense a pride in correct performance.

3. Conceptual aids. Music of a familiar nature might provide clues for inferential thinking by association with a new experience not previously related to familiar ones.

4. Memory reinforcement. The use of music is suggested to establish associations of familiar with the unfamiliar, or to associate new learning in a framework of music to aid recall.

5. Attitude and opinion determiners. Music regarded highly by the audience might serve to secure favorable attitudes towards the visual and auditory material of film.

In conclusion, Zuckerman made a statement about the relationship of his findings to experimental film research. He concluded that the relationships suggested above are not supported by any experimental evidence, and that they may well prove

ineffective when tested experimentally in actual learning situations.

Gerrero (1969) researched the design of instructional film messages requiring knowledge of the functions and interactions betweet the film and music elements. This study investigated congruency and structure as two of the conditions which systematically influence the relative effectiveness of the music component. The study had three purposes: (1) to ask if the perceived judgments of a film visual could be significantly altered by music that is made to co-exist with the scenes, (2) to investigate the usefulness of the point of resolution formula in predicting the judgments of film with music combinations from knowledge of the component parts, and (3) to consider the effects of congruency and structure and the interaction of these conditions on component performance. In reference to these purposes, Gerrero stated:

> The broadest generalization from the findings was that music appears to exercise considerable influence when

made to co-exist with a film scene. The influence was systematic and was predicted with considerable accuracy with Osgood's point of resolution formula. Over-all, film component had a greater influence on the film with music combination than did the music. This influence, however, varied considerably among examples. The precision of the point of resolution predictions as well as the relative influence of the components seemed to be highly dependent on the degree of congruency existing between the two components. Structure, an assessment of viewer consensus, also affected component relationships, but to a lesser degree. Music influence was found to be greater than the film component influence only in an incogruous combination with high film structure and low music structure.

In a study to determine the effectiveness of functional music in instructional television, Griffin (1969) tested

functional music that was composed for an instructional television program. The study was designed to determine whether functional music of an instructional television program facilitated learning when the effects of perceptual intelligence and musical aptitude were controlled.

Griffin's specific problems were as follows:

> What is the difference in learning achievement between two student groups exposed to two films, in which one group views the film with functional music and the other views the film without functional music, when the effect of (1) perceptual intelligence and (2) musical aptitude are controlled? (3) Will the intercorrelations between perceptual intelligence, musical aptitude and learning achievement be significantly positive?

After the treatment of the data from one hundred thirty-seven junior high school students divided into three groups, Griffin concluded:

> Functional music underscore neither

facilitates nor impedes learning; however, further study in music placement procedures may yield significant results.

Since limited research has been conducted on instructional film and television music, there seems to have been the tendency of producers to disregard music as an important variable of educational film and television productions. This study was designed to examine one aspect of media design, the effect of learners of background music in a dramatic television presentation.

PROBLEM STATEMENT

The purpose of this study was to investigate the effects of background music in a dramatic television presentation on university students' perception and retention of the presentation's cognitive content. The questions investigated were as follows:

1. Will background music in a dramatic television presentation influence students' perception and retention of cognitive content?
2. Will different background music or no background music in a dramatic

television presentation have different influences on students' perception and retention of cognitive content?

PROCEDURES

To accomplish the purpose, Rats, a one-act play by Israel Horovitz, was selected for its content and subject matter. Written permission to use the play in the experiment was obtained from the playwright. The experiment made a black-and-white videotape presentation of the tewnty-minute play. This was accomplished with the assistance of three actors and a television crew from East Texas State University in Commerce, Texas. The play was recorded with a two-camera operation utilizing a switcher-fader with a half-inch format videotape recorder. No attempt to polish the presentation was undertaken. The sound and picture were considered good quality. The play was recorded without background music.

From the original videotaped play, five black-and-white copies were made of the same dramatic television presentation, Rats--four of which had different treatments of background music, and one had no background music. Background music as

described below was added to the four copies by audio-mixing of continuous disk phonograph music at a predetermined decibel level. The decibel level for each music treatment was approximately one-third of the decibel level of the actor's dialogue.

The following treatments were used:

1. Play with no background music.
2. Play with large orchestral contemporary music: First Movement of Dmitri Shostakovich's Symphony No. 6 Op. 54.
3. Play with modern Japanese jazz music: Silver World with bamboo flute, bass, piano, and drums.
4. Play with small ensemble American folk music: Foggy Mountain Banjo with banjo and guitar.
5. Play with solo instrument background music: Johann Sebastian Bach's Unaccompanied Suite No. 3 for Viola.

PILOT STUDY

A pilot study was conducted to facilitate the construction and evaluation of a test instrument for the experiment. The subjects for the pilot study were

selected randomly from second-semester sophomore English students at East Texas State University. Subjects were selected because plays of the nature of Rats are studied by these students.

In the pilot study, the videotape recording of the play with no background music was presented via closed-circuit television to twenty-five subjects. After the presentation, a multiple-choice test of twenty-five items was given to the subjects. The test covered both factual and interpretative information concerning the play. On the basis of the test results and a discussion of the play by the subjects, an item analysis was made, after which the test was completely revised.

A second group of fifteen subjects watched the same treatment of the play, and the revised test was administered to them. On the basis of the second test results, an item analysis was made, and a reliability coefficient was computed. The revised test instrument revealed an acceptable difficulty of items and an acceptable reliability coefficient. The reliability coefficient of r = .7705 was obtained using the Kuder-Richardson Reliability Test (1939).

With the Spearman-Brown Prophecy Formula for estimating increased reliability with two-times the test length, the reliability coefficient became r = .8704, which was an acceptable coefficient of reliability for the experiment. Data collected from the pilot groups were not used in the main study.

SELECTION OF SUBJECTS

A random number table was used to select 107 East Texas State University sophomore students enrolled in five sections of English 202 during the spring semester of 1974. The five class sections of students were chosen from a group of English 202 class sections listed in the Department of Literature and Languages. The criteria for the selection of the five English 202 sections were as follows:

1. All the sections met on the same days of the week at a time period of midday.
2. All sections contained an acceptable number of subjects per class with a split ratio of females to males.
3. All the sections met in classrooms compatible to the showing of the

television preseantation.

4. All the sections were selected for the same reason as the pilot groups: the sophomore English curriculum at East Texas State University utilizes plays of the nature of Rats.

DATA COLLECTION AND ANALYSIS

The physical environment for data collection from the five selected English 202 sections was the same as the environment for the pilot groups. Darkened classrooms in the Hall of Languages at East Texas State University were utilized during the same time period on a three-day schedule. In the front of each classroom, a videotape recorder and a television monitor were placed to play-back one of the dramatic television presentation treatments. The subjects chose their seats from which to view the television monitor. The volume and tone controls were adjusted on the monitor for clarity of audio for all subjects. The audio and video of the television presentations were considered good and clear for all subjects.

Before each group of subjects was shown one of the randomly assigned presentation

treatments, a standardized introduction was given.

The test was administered to each group of subjects following the presentation of the play. The tests were scored, and group means were statistically compared using the analysis of variance test, one-way classification. The .10 Alpha level was used as a basis for rejecting the hypotheses:

1. There will be significant difference in university students' perception and retention of a dramatic television presentation's content with different background music treatments to the presentation.
2. There will be a significant difference between background music treatments and no-background music treatment in a dramatic television presentation on university students' perception and retention of cognitive content in the preseantation.

The raw data for the five groups consisted of test scores from a twenty-five item, multiple-choice test given after each

presentation. The comparison of the presentation treatments was made by determining the significance of the difference between the group means of the five groups, each having received a different background music or no music treatment. When all the raw scores were collected, the five groups' scores were statistically analyzed by computer. The raw scores from the test for each group revealed the following:

Table 1

Table 1

A Summary of Raw Scores for the

Five Treatment Groups

Raw Score	Treatments					Total
	I[a]	II[b]	III[c]	IV[d]	V[e]	
24-25						
22-23		1	1		1	3
20-21		1	2	1		4
18-19	1	4	3	5	4	17
16-17	9	5	2	5	5	26
14-15	6	1	2	5	3	17
12-13	5	5	2	5	3	20
10-11	3	3	1	1		8
8-9	1	2	3	1	2	9
6-7	1					1
4-5	1					1
2-3						
0-1						
N	27	23	16	23	18	107
Mean	13.70	15.13	15.00	15.17	15.39	14.80
SD	3.39	3.72	4.54	2.94	3.61	3.66

[a] No music treatment [b] Shostakovich

[c] Japanese Jazz [d] Banjo and guitar

[e] Bach

FINDINGS

Hypothesis 1 stated that there would be a significant difference at the .10 Alpha level in university students' perception and retention of a dramatic television presentation's content with different background music treatments to the presentation. The one-way analysis of variance was computed using the music treatment groups' mean scores. The results of this test are shown in Table 2.

Table 2

Summary of Analysis of Variance for Music Treatment Groups' Scores

Source of Variation	Sum of Squares	Degrees of Freedom	Variance Estimate
Between Treatments	1.3554	3.	0.4518
Within Treatments	1082.1946	76.	14.2394
Total	1083.5498	79.	F = .0317
F (.10) equals 2.18 at 60 df			$p > .10$

The F score computed for the music treatment groups was .0317. The .10 Alpha level of significance at 60 degrees of freedom was 2.18. Consequently, Hypothesis 1 was rejected. This meant that there was no significant difference among the mean scores in the four different background music treatment groups.

Hypothesis 2 stated that there would be a significant difference at the .10 Alpha level between background music treatments and no background music treatment in a dramatic television presentation on university students' perception and retention of cognitive content in the presentation.

Table 3 presents the summary of the analysis of variance test between the background music treatment groups and no-background music treatment group. The results of the analysis of variance test were computed from the group mean score for each of the five treatment groups.

The smaller experimental *F* value of .8254 compared with the critical *F* value of 2.04 did not indicate any significantly different mean score at the .10 Alpha level. Therefore, Hypothesis 2 was rejected. This indicated that there was no significant difference among the mean scores in the four different background music treatment groups and the no-background music treatment group.

Table 3

Summary of Analysis of Variance on Music Treatment Groups' Scores and No Music Treatment Group Scores

Source of Variation	Sum of Squares	Degrees of Freedom	Variance Estimate
Between Treatments	45.0536	4.	11.2634
Within Treatments	1391.8247	102.	13.6453
Total	1436.8784	106.	*F* = .8254
F (.10) equals 2.04 at 60 df			p > .10

CONCLUSIONS

The following general conclusions were deduced from this study.

The results of the experiment indicated that there was no significant difference in students' perception and retention of a dramatic television presentation's content when different background music treatments were employed in the presentation. This finding suggests that a dramatic television presentation with different background music of Shostakovich, Japanese jazz, banjo and guitar, or Bach had no significant influence on university students' perception and retention of the presentation's cognitive content. This finding seems to contradict possible music application to learning as stated by Zuckerman. Zuckerman reported that music could provide an initial set for attention by overcoming perseverance or previous distractions. Zuckerman also stated that the use of music is suggested to establish association of familiar with the

unfamiliar, or to associate new learning in a framework of music to aid recall. This study did not support these statements.

An analysis of the data revealed also that no significant difference was found in students' perception and retention of a dramatic television presentation's cognitive content with either background music treatments or the no-background music treatment employed in the presentation. This suggest that a dramatic television presentation with no background music, or background music of Shostakovich, Japanese jazz, banjo and guitar, or Bach had no significant influences on univeristy students' perception and retention of the presentation's cognitive content. This finding supports Griffin's conclusion as reported. He concluded that functional music underscore neither facilitates nor impedes learning.

RECOMMENDATIONS

Based on the results of this study, the following suggestions for further research are made:

1. Since this study used only university students in English classes as subjects, a study in background music in a presenation of different factual and interpretative material on different cognitive levels of subjects is recommended. For example, presentations in science, history, or mathematics to elementary, junior high, or high school students are suggested.

2. There is need for studies to be conducted in dramatic television presentations with different types of background music other than those employed in this study. This experiment used only four types of background music out of a wide range of possibilities that might have influenced students' perception and retention of a presentation's cognitive content.

3. Since this experiment dealt only with the cognitive domain of learning, similar studies should be conducted using background music treatments and no-background music treatment in a dramatic television presentation to

study the affective domain of learning, along with the cognitive domain.

4. While this study was concerned with a small group of subjects tested on one instrument in one environment, further population, testing, and environmental controls in experimentation are recommeded in the investigation of background music on the learning process.

5. Since this experiment was limited to a short duration of time, a longer time period of experimentation is suggested. A longer time period between learning and testing might reveal different results. More time between post-test and retention on more content is also suggested.

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